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**TRIBOROUGH
BRIDGE AND
TUNNEL
AUTHORITY**



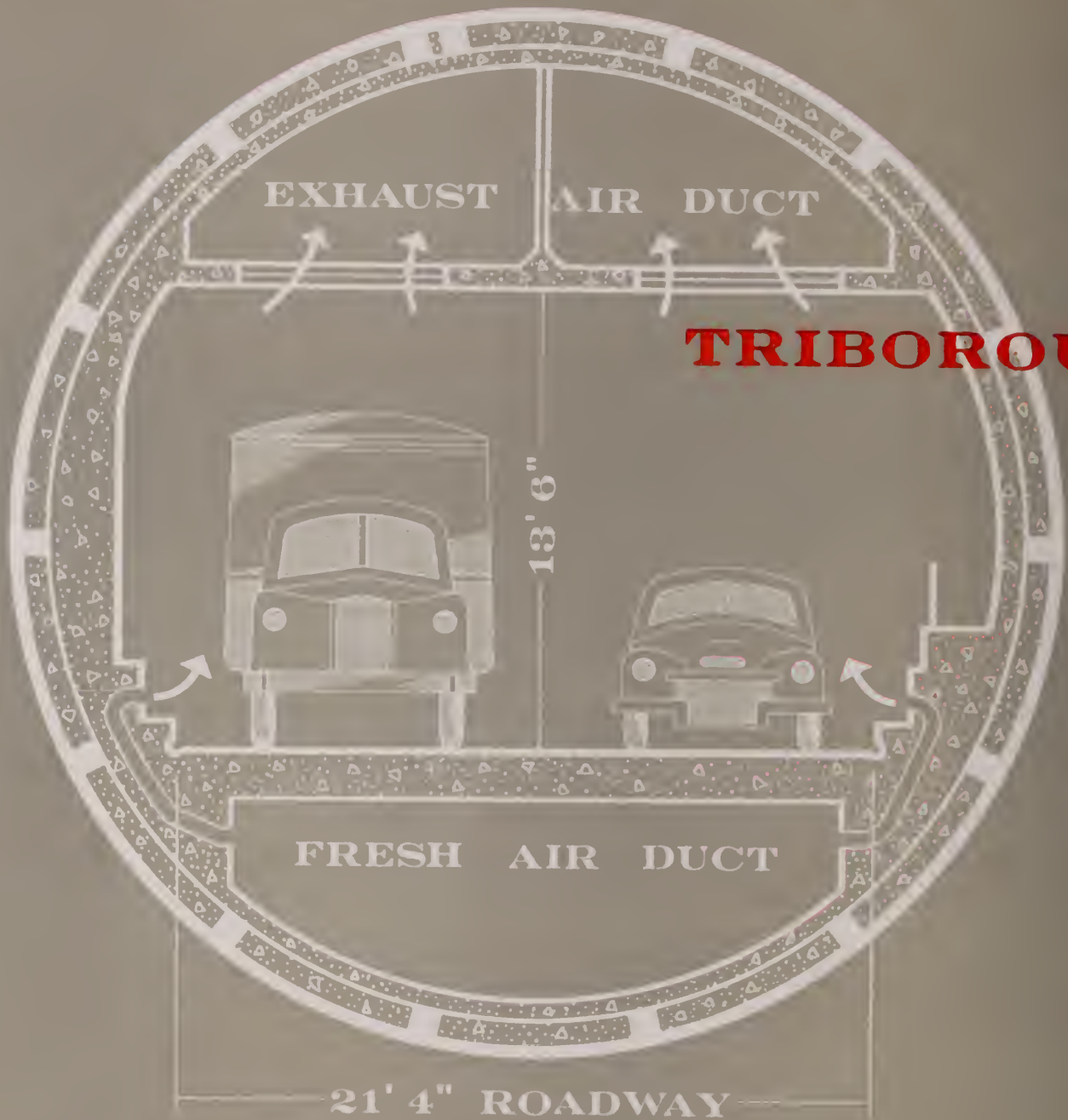
**BROOKLYN
BATTERY**



TUNNEL

MAY 1950

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MANHATTAN PORTAL

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BRIDGE AND TUNNEL AUTHORITY

ROBERT MOSES, Chairman

GEORGE V. McLAUGHLIN, Vice-Chairman

WILLIAM J. TRACY, Vice-Chairman

GEORGE E. SPARGO, General Manager and Secretary

HARRY TAYLOR, Assistant General Manager

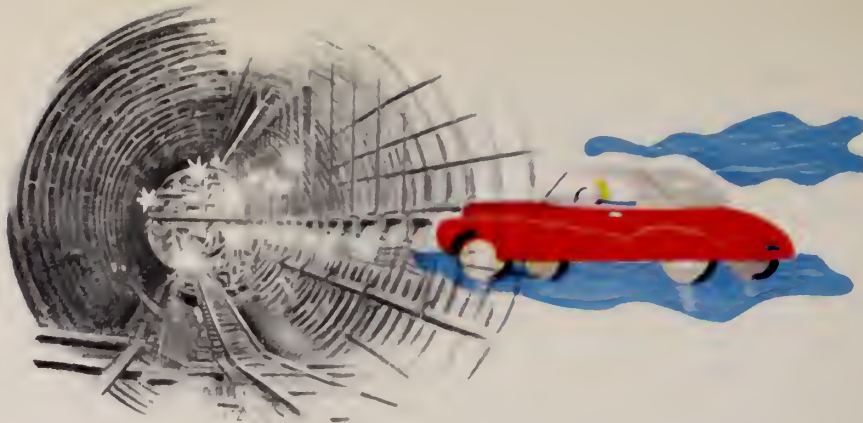
WILLIAM S. CHAPIN, Consulting Engineer

MADELINE McKNIGHT, Assistant Secretary

HAZEL TAPPAN, Assistant Secretary



TOLL BOOTHS



INTRODUCTION

The Triborough Bridge and Tunnel Authority represents a consolidation of various agencies engaged in building and operating toll crossings and related facilities within the City of New York. It is in charge of three unpaid members appointed by the Mayor for long overlapping terms. It is privately financed, is not supported by government credit, and it aims therefore to achieve the benefits of public responsibility, private enterprise and sound business management.

The Brooklyn Battery Tunnel joins the Triborough, Bronx-Whitestone, Henry Hudson, Marine and Cross Bay bridges, and the Queens Midtown Tunnel in our list of crossings, and other facilities such as the Battery Garage, East Side Airline Terminal, and Columbus Coliseum, will soon be added. We have planned, supported and in part financed many approaches and connections, part of the great metropolitan arterial system, and we hope before long to produce a workable plan for the much mooted Midtown Manhattan Elevated Expressway.

In the pages which follow, the record of the history of this Authority is told simply and graphically, so that he who runs may read.

To the many contributors, official and unofficial toward the completion of the new tunnel, we offer our thanks and bespeak their continued support of our program and administration.

We note with sorrow the death of our fellow member, Charles Garrison Meyer, on the eve of publication of this report. He was a loyal and enthusiastic partner in this and other civic enterprises, and we regret that he will not be present at the tunnel opening.

ROBERT MOSES, Chairman

GEORGE V. McLAUGHLIN, Vice Chairman

WILLIAM J. TRACY, Vice-Chairman



TRIBOROUGH BRIDGE

HISTORY

The story of the Brooklyn Battery Tunnel is one of many disputes and vicissitudes. At the instance of Mayor La Guardia the New York City Tunnel Authority had been established in 1935 to build the Queens Midtown Tunnel. In 1936 the City advanced \$75,000 to this Authority for preliminary studies of a Battery Tunnel. On January 25, 1939, however, the Mayor and Board of Estimate decided on a bridge instead of a tunnel, and to use the Triborough Bridge Authority as the agency to finance it. This started a bitter controversy provoked by opponents of the bridge who claimed it would spoil the view from Brooklyn. On July 17, 1939 Secretary of War Woodring personally ruled that a bridge could not be built "seaward of the Brooklyn Navy Yard." Time has shown that this decision, dictated by personal pressure exerted by opponents of the bridge, and contrary to the judgment of reputable Army Engineers, was unsound. The bridge would have cost one half as much to build, one third as much to operate, would have accommodated about twice the traffic and could have been finished and operating before we entered the war, as was the Gowanus Parkway, an essential approach completed by the Triborough Bridge Authority in 1942. The bridge would have been earning interest and amortization for seven years and the savings in interest cost during construction alone would have been at least \$7,000,000. After extended studies by army, navy and air experts, the War Department reversed itself and on at least two occasions, one on the Delaware and one at the Narrows here in New York Harbor, issued permits for the construction of new bridges seaward of Navy Yards.

Secretary Woodring's ruling favoring a tunnel having been made, responsibility for constructing this crossing fell upon the New York City Tunnel Authority.

Representatives of the City, the New York City Tunnel Authority and the Triborough Bridge Authority then met in Washington in June, 1940 with representatives of the Reconstruction Finance Corporation and agreed with the Reconstruction Finance Corporation



MANHATTAN

EAST
RIVER

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FEET

LIETZ

BATTERY
PARKING
GARAGE

BLOWER
BUILDING

UNDERGROUND
EXHAUST
BUILDING



BRONX WHITESTONE BRIDGE

BROOKLYN



VENTILATION
BUILDING

VENTILATION
BUILDING

TOLL
BOOTH

GOWANUS
PARKWAY

on a new loan to the New York City Tunnel Authority of \$57,000,000, sufficient to construct the tunnel from portal to portal without land and approaches. The Reconstruction Finance Corporation required the City and the Triborough Bridge Authority to cooperate to the extent of acquiring land and constructing highway approaches. Tunnel construction started on October 28, 1940.

When war broke out, construction shafts in both Brooklyn and Manhattan had been completed and actual tunneling was well under way. In spite of shortages of material, tunneling continued until the latter part of 1942, at which time a complete shutdown was necessary. The War Production Board restrictions were not lifted until the end of 1945 when work was resumed.

In June, 1945 during the last year of Mayor La Guardia's third term, he asked Commissioner Moses, Chairman of the Triborough Bridge Authority, and Commissioner McLaughlin, also a member, to serve as members of the New York City Tunnel Authority with the intention of consolidating the two Authorities under one management, and reorganizing tunnel finances. The Queens Midtown Tunnel had been a financial failure since it opened in November, 1940, and the Tunnel Authority owed the Reconstruction Finance Corporation \$6,000,000 in back interest on the Queens Midtown Tunnel bonds. Construction costs had spiraled, and the original \$57,000,000 borrowed for the Brooklyn Battery Tunnel was obviously insufficient to complete the project, the cost of which had risen to \$80,000,000. In 1946 at the instance of Mayor O'Dwyer, the two Authorities were formally consolidated by State law in the Triborough Bridge and Tunnel Authority.

After a year and a half of negotiation with the Reconstruction Finance Corporation, the Authority refunded the outstanding tunnel bonds at a reduced rate of interest and borrowed enough additional money to complete the Brooklyn Battery Tunnel and to build a 1050-car parking garage at the Battery. The Authority retained the right to call the bonds without premium, and in May, 1949 again refunded its bonds, this time selling them to the public in the open market, and reducing the interest cost to 2.68%.

In spite of general prohibition against letting contracts during the war, actual tunneling was permitted to continue, but the construction schedule was thrown out of gear and it was necessary completely to revise major contracts. Resumption of work in 1945 was followed by a series of incidents which greatly delayed construction. Strikes, financial problems, shortages of labor, equipment and material, red tape, and the failure of contractors to meet their obligations, caused serious delays.

The two tiled, ventilated twin tubes of the tunnel are now ready for use, forming a new link in the arterial highway system of the metropolitan area. The tunnel will provide needed additions to the lower East River bridges and create an express connection from the East River and West Side Drives in Manhattan to the Gowanus Parkway and Brooklyn-Queens Expressway in Brooklyn. It will carry a substantial amount of commercial as well as passenger traffic. Crossing time

THE OPENING OF THE TUNNEL PERMITS THE CLOSING OF THE BROOKLYN BRIDGE FOR RECONSTRUCTION. SIX LANES OF WIDE PAVEMENT WILL REPLACE THE PRESENT FOUR NARROW LANES





HENRY HUDSON BRIDGE

between the Battery and Brooklyn will be four minutes. The practical capacity of the crossing will be about 16,000,000 vehicles per year.

The tunnel is 9,117 feet in length between the portals, and is the longest under water vehicular tunnel in this country. Each tube will accommodate two lanes of traffic on 21 feet, 4 inches of pavement. It is ventilated in the usual way by fifty-three huge blower and exhaust fans located in Manhattan, Governors Island and in Brooklyn. These will provide normal maximum ventilation of 4,161,000 feet of fresh air per minute. It will resemble other local tunnels in most respects, the most radical change being in lighting. Conventional lighting by use of incandescent lamps causes flickering or light and dark spots as the tunnel is traversed. Each tube of the Brooklyn-Battery Tunnel will be lit by two continuous lines of fluorescent lamps at the intersection of the side walls and the tunnel ceiling. These were installed after a successful sample test of more than two years in the Queens Midtown Tunnel. As in other tunnels, the intensity will be increased near the portals to provide a transition between day and artificial light.

There are still gaps in the arterial system planned to feed this tunnel. The elevated highway on South Street which will connect the East River Drive with Battery Park is now being designed by the Borough President of Manhattan and contracts will be let soon for foundations. The tunnel under Battery Park connecting South Street with West Street is under construction and is scheduled to be finished in October of this year. In Brooklyn, the Prospect Expressway connecting the Gowanus Parkway with Ocean Parkway has been designed, but land has not been acquired and there are as yet no Federal and State construction funds available for construction. The Brooklyn-Queens Expressway is being built with the City, State and Federal governments, but the difficulties of tenant removal have delayed progress.

Statistics, photographs and sketches of the Brooklyn-Battery Tunnel follow. The history of all the projects and consolidations which have marked the progress of the Triborough Bridge and Tunnel Authority will also be found in graphic form in succeeding pages.



BATTERY PARK AND MANHATTAN APPROACHES



GOVERNORS ISLAND VENTILATION BUILDING

BATTERY PARK

Battery Park, which has been closed to the public since 1941 as a result of the construction of the tunnel by the Authority, and of the West Street-South Street underpass by the Borough President of Manhattan, is now being reconstructed by the Park Department. The park has been completely redesigned, will have additional facilities for the public and will be far more attractive and useful than in the past. All of the former memorials and statuary have been carefully stored away and will be re-erected in more appropriate settings.

The reconstruction of the park is being carried out in two stages. The work now under way will be completed this fall and will re-open nine acres of the park to public use. The remainder of the park, extending from the vehicular underpass to the water front, will be placed under construction in 1951 and will be finished in the fall of that year.

5



MARINE PARKWAY BRIDGE



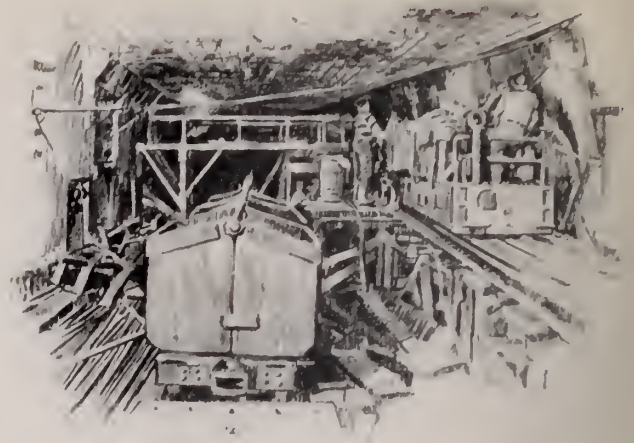
BATTERY PARK

BROOKLYN PLAZA AND APPROACHES





THE MUCKER



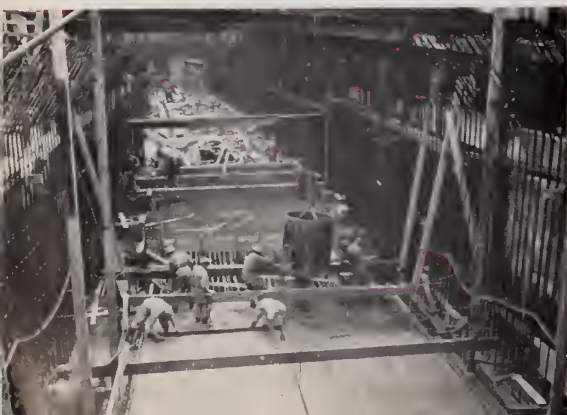
TOLL BOOTHS BROOKLYN



ELEVATOR AT GOVERNORS ISLAND



BATTERY PARK OPEN CUT



GOVERNORS ISLAND VENTILATION BUILDING



BROOKLYN PLAZA



CROSS BAY PARKWAY BRIDGE



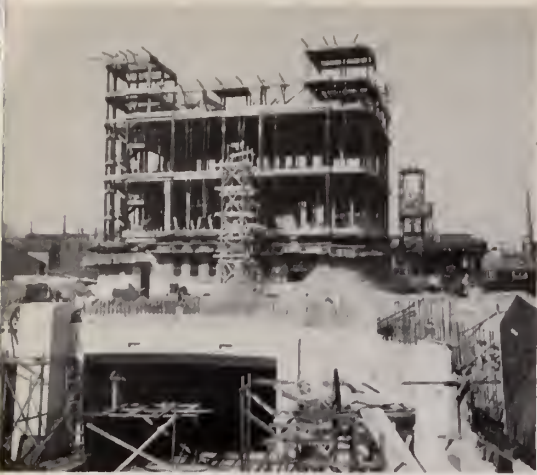
GOVERNORS ISLAND SHAFT TO VENTILATION BUILDING



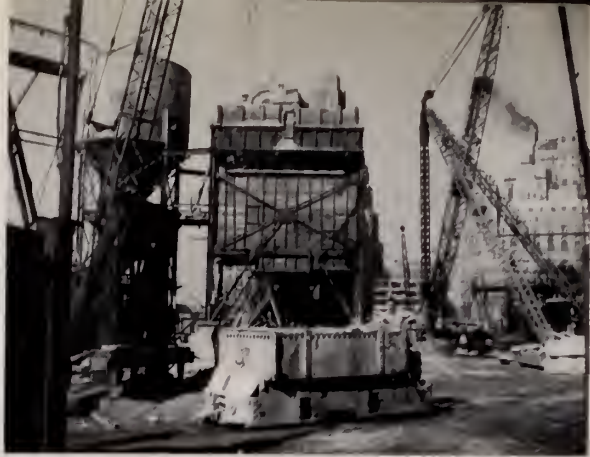
BATTERY PARK OPEN CUT



BOLTING CAST IRON LINING



BROOKLYN PORTAL



MANHATTAN CONSTRUCTION SHAFT



PLACING CAST IRON TUNNEL LINING



MANHATTAN VENTILATION BUILDING

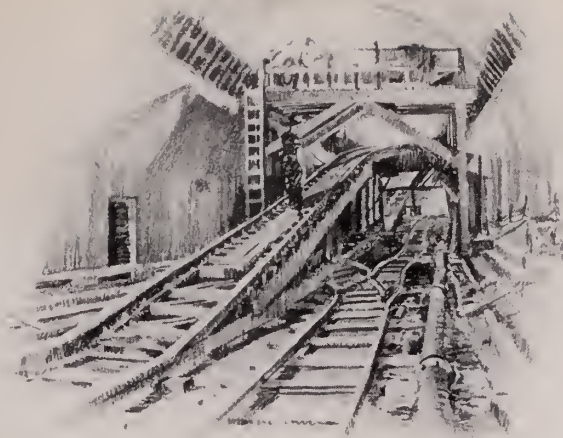


MANHATTAN BOROUGH PRESIDENT UNDERPASS IN BATTERY PARK

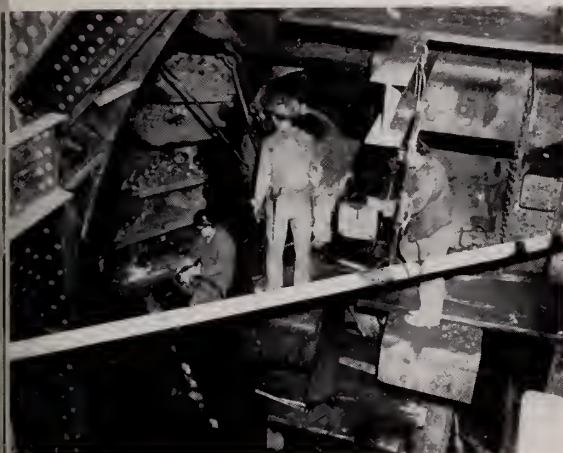


MANHATTAN PORTAL





QUEENS MIDTOWN TUNNEL



GOVERNORS ISLAND SHAFT



SERVICE BUILDING BROOKLYN



GOVERNORS ISLAND VENTILATION BUILDING



ELECTRICAL EQUIPMENT



BATTERY PARK OPEN CUT



GOVERNORS ISLAND BLOWERS



MANHATTAN BOROUGH PRESIDENT UNDERPASS IN BATTERY PARK



BROOKLYN PLAZA



BROOKLYN CONSTRUCTION SHAFT



GOVERNORS ISLAND SHAFT



MANHATTAN VENTILATION BUILDING



SETTING TILE IN THE TUNNEL

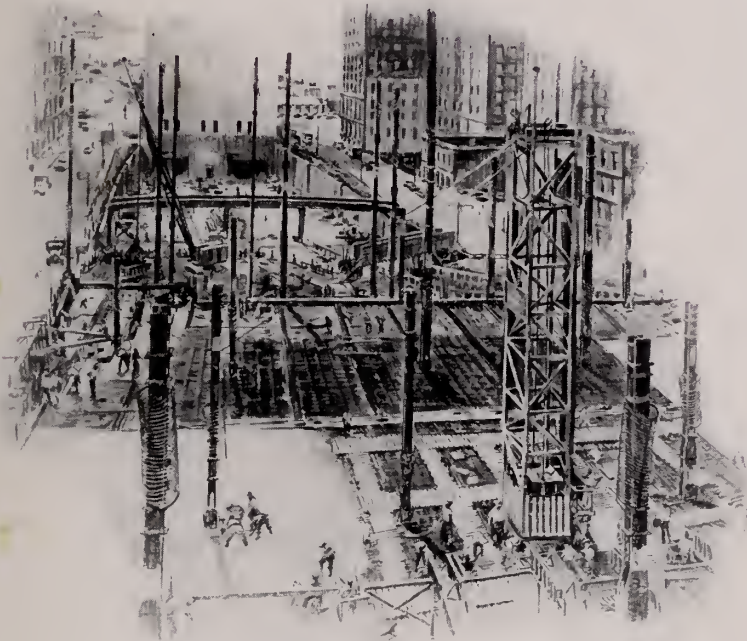
BATTERY PARKING GARAGE

The first publicly owned parking garage within the City of New York will accommodate 1,050 cars. The seven parking floors, including the roof, will be reached by ramps at the south end of the building. Parking fees charged will be comparable with those charged by similar facilities in the area. This simple, concrete structure cost \$3,500,000 exclusive of land. The land was acquired by the City of New York and assigned to the Authority for the purpose of constructing a garage. It will be completed and opened for use about July 1, 1950.

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BATTERY PARKING GARAGE



BATTERY PARKING GARAGE AND MANHATTAN PORTAL



MANHATTAN PEDESTRIAN BRIDGE



1 BROOKLYN BATTERY TUNNEL

2 TRIBOROUGH BRIDGE

Opened July 1936, the Triborough Bridge consists of three river crossings, the north-south eight lane Bronx Kills and East River Bridges to Bronx and Queens and the six lane east-west Harlem River lift bridge to Manhattan. The main span over the East River is 1380 feet in length, the length of all structures totaling three miles. Direct connections are made with Deegan Expressway, Bruckner Boulevard, Roosevelt Drive and Grand Central Parkway.

3 WHITESTONE BRIDGE

Opened April 1939, the Bronx Whitestone Bridge is a link in the Belt Parkway circling New York City. Six lanes of pavement carry traffic over the upper East River connecting the Hutchinson River Parkway in Bronx and Westchester to the Whitestone and Cross Island Parkways in Queens. A suspension bridge with a center span of 2300 feet, the fourth longest in the world, it is unsurpassed in its simple and functional design.

4 HENRY HUDSON BRIDGE

Opened December 1936, the Henry Hudson Bridge carries the Henry Hudson Parkway across Spuyten Duyvil from Manhattan to the Bronx, and north to the Sawmill River Parkway in Westchester. A steel arch bridge with two decks of four lanes each, it was developed as a part of the West Side Improvement — covering of the New York Central tracks, enlargement of Riverside Park and construction of the Parkway and Elevated Highway to the Battery.

5 MARINE PARKWAY BRIDGE

Opened July 1937, the steel truss Marine Parkway Bridge over Rockaway Inlet is 4022 feet in length and has a 540 foot center lift span, the longest highway lift span in the world. An integral part in the development of Jamaica Bay and Rockaway peninsula as a great recreational and residential section, it is a direct four lane connection from the Belt Parkway to the seventy acre parking field and reconstructed beach at Jacob Riis Park.

6 CROSS BAY PARKWAY BRIDGE

Opened June 1939, the reconstructed and widened six lane Cross Bay Parkway lift bridge connects the mainland via Big Egg Marsh in Jamaica Bay to the Rockaway peninsula where an area back of the boardwalk 200 feet wide and one and a half miles long was completely reconstructed by the Authority. A slum and cheap amusement area was replaced with a traffic separator at 94 Street, recreational areas, planting areas and a shorefront drive.

7 QUEENS MIDTOWN TUNNEL

Opened November 1940, the 6414 foot four lane Queens Midtown Tunnel under the East River at 38 Street in Manhattan was constructed by the New York City Tunnel Authority. Operated since 1946 by Triborough, it will connect via the Borden Avenue Viaduct with the Brooklyn Queens Expressway now under construction and the proposed Queens Midtown Expressway. At the Manhattan end traffic is routed in three directions to the local streets.

8 BATTERY PARKING GARAGE

**TRIBOROUGH BRIDGE
AUTHORITY**
Reorganized 1934

**TRIBOROUGH BRIDGE
AND APPROACHES**

**BRONX WHITESTONE
BRIDGE**

**WHITESTONE
PARKWAY**

**FLUSHING RIVER
BRIDGE**

**HENRY HUDSON
PARKWAY AUTHORITY 1934**

**HENRY HUDSON
BRIDGE**

Henry Hudson Parkway
by Dept of Parks & State
Dept of Public Works

**MARINE PARKWAY
AUTHORITY 1934**

**MARINE PARKWAY
BRIDGE**

**JACOB RIIS PARK-
ING FIELD**

**NEW YORK CITY
PARKWAY AUTHORITY 1938**

**CROSS BAY PARK-
WAY BRIDGE**

**ROCKAWAY IMPR-
OVEMENT**

**NEW YORK CITY
TUNNEL AUTHORITY 1936**

**QUEENS MIDTOWN
TUNNEL**

**BROOKLYN BATTERY
TUNNEL**

**CONSOLIDATED TRI-
BOROUGH BRIDGE
AUTHORITY 1940**

**GOWANUS
PARKWAY**

**BELT PARKWAY
SHEEPSHEAD BAY
SECTION**

**HUTCHINSON RIVER
PARKWAY NYC
SECTION**

**WIDENING SAWMILL
RIVER PARKWAY**

**TRIBOROUGH BRIDGE
AND TUNNEL AUTH-
ORITY 1946**

**BROOKLYN BATTERY
TUNNEL**

**BATTERY PARKING
GARAGE**

**WARDS ISLAND PED-
ESTRIAN BRIDGE**

**PROPOSED NARROWS
BRIDGE**

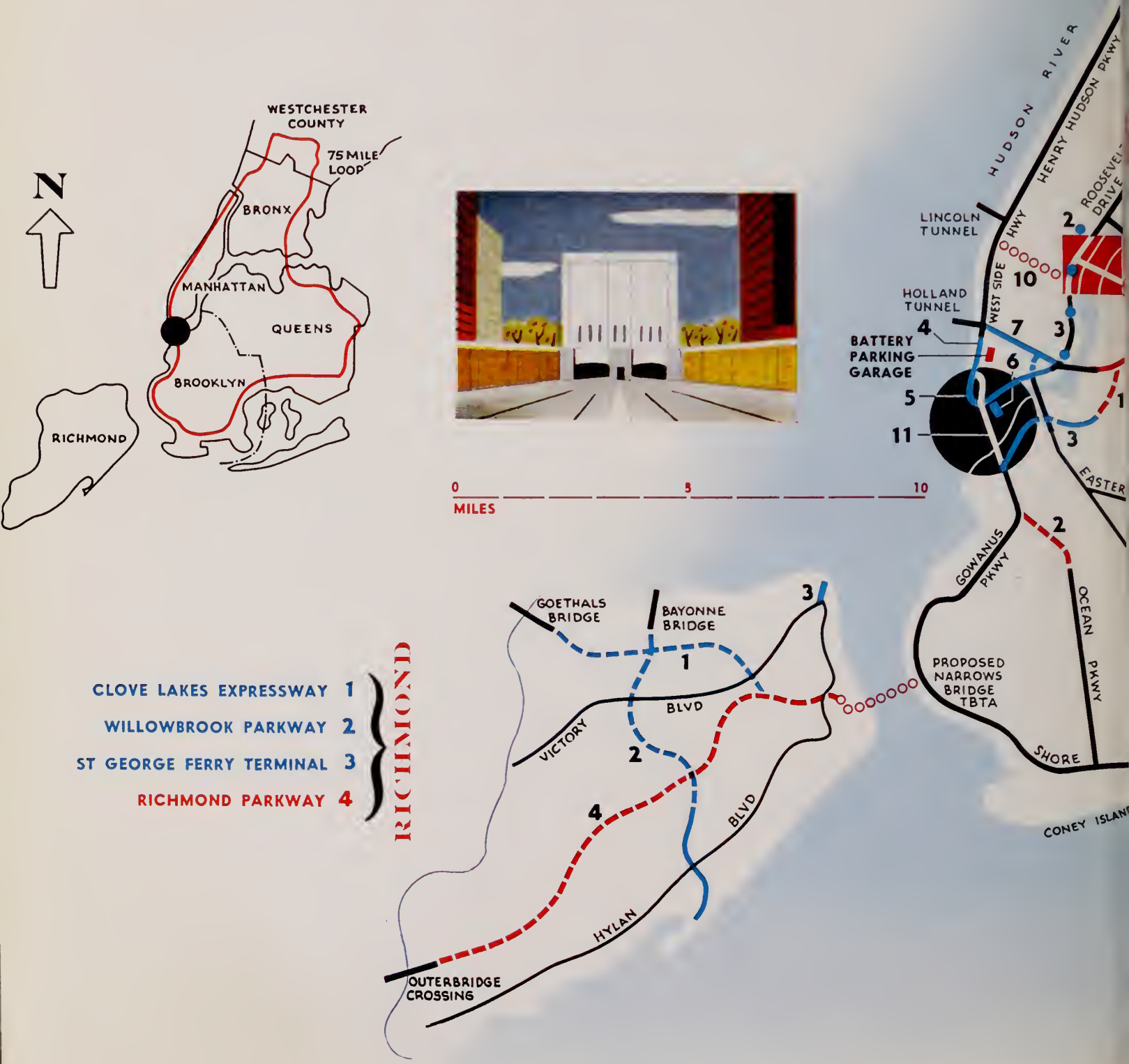
PROPOSED COLISEUM

**PROPOSED MID-
MANHATTAN
EXPRESSWAY**

**PROPOSED PARKING
GARAGE OR BUS
TERMINAL AT
QUEENS MIDTOWN
TUNNEL**

TRIBOROUGH CROSSINGS

VITAL LINKS IN THE METROPOLITAN ARTERIAL SYSTEM





BRONX

- 1 DEEGAN EXPRESSWAY
- 2 CROSS BRONX EXPRESSWAY
- 3 BRONX RIVER EXPRESSWAY
- 4 BRONX RIVER PARKWAY
- 5 NEW ENGLAND THRUWAY
- 6 MOSHOLU PKWY RECONSTRUCTION
- 7 BOSTON ROAD RECONSTRUCTION
- 8 BRONX AND PELHAM PKWY RECONSTRUCTION
- 9 BRUCKNER BLVD RECONSTRUCTION

MANHATTAN

- 1 HARLEM RIVER DRIVE
- 2 UNITED NATIONS APPROACHES
- 3 ROOSEVELT DRIVE-SOUTH ST VIADUCT & OVERPASSES
- 4 WEST SIDE HIGHWAY
- 5 BATTERY PARK UNDERPASS
- 6 BATTERY FERRY TERMINAL
- 7 LOWER-MANHATTAN EXPRESSWAY
- PORT OF NEW YORK AUTHORITY
- 8 GEO WASHINGTON BRIDGE-TUNNEL APPROACHES
- TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY
- 9 WARDS ISLAND PEDESTRIAN BRIDGE
- 10 MID-MANHATTAN EXPRESSWAY
- 11 BROOKLYN BATTERY TUNNEL

QUEENS

- 1 BROOKLYN QUEENS EXPRESSWAY
- 2 QUEENS MIDTOWN EXPRESSWAY
- 3 CONDUIT BOULEVARD
- 4 INTERNATIONAL AIRPORT-APPROACH HIGHWAY
- 5 VAN WYCK EXPRESSWAY
- GRAND CENTRAL PARKWAY WIDENING
- 6 NASSAU EXPRESSWAY

BROOKLYN

- 1 BROOKLYN QUEENS EXPRESSWAY-SECTION
- 2 PROSPECT EXPRESSWAY
- 3 BROOKLYN QUEENS EXPRESSWAY-SECTION
- 4 CONDUIT BOULEVARD

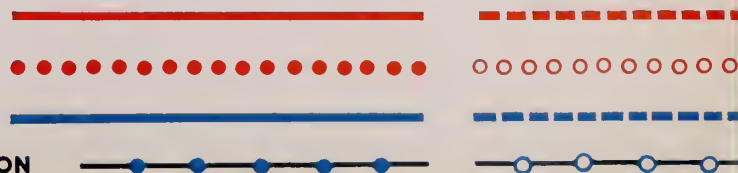


STATE-FEDERAL
AUTHORITIES
CITY FINANCED

RECONSTRUCTION

CURRENT (SINCE 1946)

SUBSEQUENT



THE GROWING ARTERIAL SYSTEM — FREE OF TRAFFIC LIGHTS AND

CURRENT STATE-FEDERAL ARTERIAL PROGRAM

	Construction Cost	% LAND	% DESIGN	% CONST. (AWARDED)
Bronx River Parkway (Bruckner Boulevard-Westchester County Line)	\$ 17,000,000	.....	.....	.....
Van Wyck Expressway (Idlewild Airport-Queens Boulevard incl. Queens Boulevard Interchange)	17,000,000	.....	.....	.....
Van Wyck Expressway Extension (Queens Boulevard-Grand Central Parkway incl. widening to Horace Harding Boulevard)	8,000,000	.....	.....	.....
Brooklyn-Queens Expressway (Kosciusko-Williamsburg Bridges)	11,000,000	.....	.....	.....
Cross-Bronx Expressway (Highbridge Park)	6,000,000	.....	.....	.....
Cross-Bronx Expressway (Bruckner Boulevard-Longfellow Ave.)	20,000,000	.....	.....	.....
Major Deegan Expressway (Van Cortlandt Park)	9,000,000	.....	.....	.....
Major Deegan Expressway (East 138 Street-Macombs Dam Bridge)	12,300,000	.....	.....	.....
New England Thruway..	14,000,000	•	.....	•
Total Cost of Construction	\$114,300,000			

COMPLETION OF CURRENT STATE-FEDERAL ARTERIAL PROGRAM

Cross-Bronx Expressway (Washington Bridge-Longfellow Ave.)	\$ 25,000,000		.....
Brooklyn-Queens Expressway (Grand Street Extension-Navy Yard)	7,000,000		.....
Major Deegan Expressway (Macombs Dam Bridge-Van Cortlandt Park)	19,000,000	•	.....
Bronx River Expressway	5,000,000	.....	.....
Prospect Expressway (Brooklyn)	14,000,000		.....
Richmond Parkway (Richmond)	11,000,000		.....
Nassau Expressway (Queens)	12,000,000	.....	...
Total	\$ 93,000,000			

PUBLIC AUTHORITY ARTERIAL PROJECTS

Triborough Bridge and Tunnel Authority—Brooklyn-Battery Tunnel.	\$ 80,000,000	.....	.....	.....
Port of New York Authority—Tunnel under West 179th Street	8,700,000	.....	.....	...
Totals	\$ 88,700,000			

LAND ACQUISITION—ARTERIAL PROGRAM

Acquisition Completed			To be Acquired		
	CITY	STATE		CITY	STATE
Van Wyck Expressway	\$ 3,900,000	\$2,600,000	Cross-Bronx Expressway		
Van Wyck Expressway Extension	840,000	660,000	Sect. 1 and Sect. 2	\$ 8,125,000	\$ 7,500,000
Cross-Bronx Expressway Sect. 3	3,000,000	2,500,000	Brooklyn-Queens Expressway Williamsburg Bridge to Navy Yard	2,600,000	2,200,000
Brooklyn-Queens Expressway Kosciusko Bridge to Williamsburg Bridge	1,740,000	1,460,000	Major Deegan Expressway Sect. 2 and Sect. 3	2,700,000	2,450,000
Major Deegan Expressway Sect. 1	720,000	580,000	New England Thruway (a)		600,000
Bronx River Expressway	1,200,000	1,000,000	Prospect Expressway	1,900,000	1,600,000
New England Thruway (a)		60,000	Nassau Expressway	25,000	25,000
			Richmond Parkway	1,800,000	1,500,000
Totals	\$11,400,000	\$8,860,000	Totals	\$17,150,000	\$15,875,000

(a) Note: Land acquired under the State Thruway Law at 100% State expense.

CURRENT

SUBSEQUENT

GRADE CROSSINGS

EACH DOT = 5 MILES

CURRENT CITY ARTERIAL PROGRAM

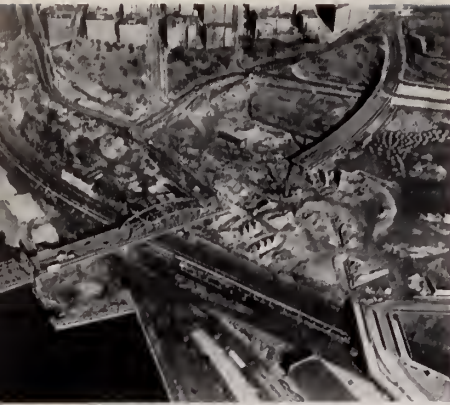
	Land (Additional Required)	Construction Cost	% LAND	% DESIGN	% CONST. (AWARDED)
West Side Elevated Highway (Duane to Rector Sts.)	City Owned	\$ 2,724,000	.....	.....	.....*
Battery Park Underpass	City Owned	9,587,000	.....	.....	.....
Franklin D. Roosevelt Drive (Viaduct, 18th to 25th Sts.)	City Owned	3,515,000	.....	.....	.....*
Franklin D. Roosevelt Drive (South St. Viaduct, Broad to Montgomery Sts.)	City Owned	12,000,000	.....	.....
Franklin D. Roosevelt Drive (East Houston St. Overpass)	City Owned	1,600,000	.....	•
Franklin D. Roosevelt Drive (Viaduct, 28th to 40th Sts.)	City Owned	4,000,000	.....	.....
Franklin D. Roosevelt Drive (Viaduct, 92nd to 99th Sts.)	City Owned	2,000,000	.....	.....
Harlem River Drive	\$ 650,000	13,150,000	.....	.....	•
First Ave. Improvement and Approaches to United Nations Site	165,000	12,350,000(b)	.....	.....	.....
Brooklyn-Queens Expressway (Brooklyn Bridge to Brooklyn Battery Tunnel Plaza)	City Owned	14,500,000	.....	.....	.....
Brooklyn-Queens Expressway (Brooklyn Bridge to Navy St.)	City Owned	6,300,000	.....	.....
Brooklyn-Queens Expressway (Kent Ave. to Navy St.)	City Owned	8,000,000	.....	.....
Brooklyn-Queens Expressway (Astoria Boulevard to Queens Boulevard)	\$ 600,000	14,000,000	.....	.....	...
Conduit Boulevard	City Owned	6,000,000	.....	.....	..
Cross-Island Parkway (Widening Laurelton to Grand Central Parkways)	City Owned	500,000	.....	.....
Cross-Island Parkway (Widening Grand Central Parkway to Whitestone Bridge)	City Owned	700,000	.....	.....
Queens Boulevard (Underpass at Grand Central Parkway)	City Owned	700,000	.....	.....
Queens Boulevard (Underpass at Grand Ave.)	City Owned	1,100,000	.....	.....
Seagirt Ave., Queens	\$ 750,000	Note: Construction by Nassau Bridge Auth.			
Bruckner Boulevard	550,000	17,000,000	.....	.....
Willowbrook Parkway	City Owned	10,500,000	.....	.....
St. George Ferry Terminal (Reconstruction and Approaches)	55,000	22,000,000	.....	.....	.....
South and Whitehall Streets Ferry Terminal (Reconstruction)	City Owned	4,200,000	.....	.....	.....
Totals	\$2,770,000	\$166,426,000			

ARTERIAL PROJECTS FOR WHICH NO FUNDS HAVE BEEN ALLOCATED

Queens Midtown Expressway	.....
Laurelton Parkway Widening (Queens)	.....
Bronx & Pelham Parkway Reconstruction (Bronx)	.....
Mosholu Parkway Reconstruction (Bronx)	.....
Boston Road Reconstruction (Bronx)	.....
Clove Lakes Expressway (Richmond)	.....

(b) Includes \$2,400,000 U.N. Funds. * Work Completed.

DEEGAN EXPRESSWAY BRONX



→ TRIBOROUGH BRIDGE

HARLEM RIVER DRIVE MANHATTAN AT COLONIAL HOUSES



→ TRIBOROUGH BRIDGE

BRONX RIVER PARKWAY
AT BRONX AND PELHAM PARKWAY



→ BRUCKNER BOULEVARD

→ TRIBOROUGH AND BRONX
WHITESTONE BRIDGES

VAN WYCK EXPRESSWAY QUEENS



→ GRAND CENTRAL PARKWAY

→ TRIBOROUGH AND BRONX WHITESTONE
BRIDGES AND QUEENS MIDTOWN TUNNEL

ST. GEORGE FERRY TERMINAL RICHMOND



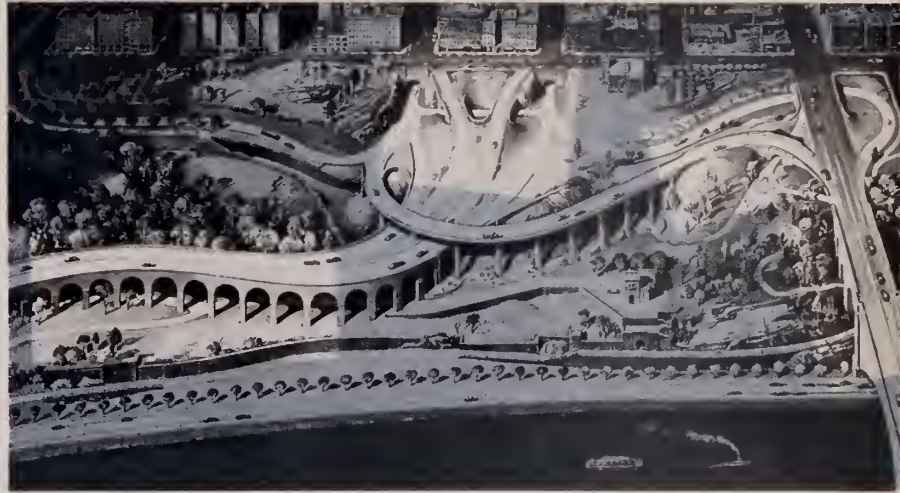
CURRENT PROGRAM

Since the end of the war, construction on arterial projects has lagged behind schedule. This has been due primarily to spiraling prices, reluctance of contractors to bid and the difficulty of moving people and clearing rights-of-way. 1949 marked the turning point and during the year, material prices and labor costs stabilized. Competition among contractors was good and the housing situation eased sufficiently to clear rights-of-way and permit the letting of a large volume of construction contracts.

The State Department of Public Works is constructing Van Wyck Expressway, Brooklyn-Queens Expressway from Kosciuszko Bridge to the Navy Yard, portions of Major Deegan Expressway, Cross-Bronx Expressway, and the first section of New England Thruway. This work is being done on land acquired jointly by the City and the State, construction being paid for by the State and Federal governments.

The Borough President of Manhattan has jurisdiction over the construction of the Battery Park Un-

HIGHBRIDGE PARK MANHATTAN



HARLEM RIVER
DRIVE



TRIBOROUGH
BRIDGE

TUNNELS TO GEORGE
WASHINGTON BRIDGE

CROSS BRONX
EXPRESSWAY



BRONX WHITESTONE
BRIDGE

CROSS BRONX EXPRESSWAY



→ BRONX WHITESTONE BRIDGE

BROOKLYN QUEENS EXPRESSWAY



→ BROOKLYN BATTERY TUNNEL

MANHATTAN
WEST SIDE ELEVATED HIGHWAY



→ BROOKLYN BATTERY TUNNEL

derpass, Franklin D. Roosevelt Drive, First Avenue in the United Nations area, and the Harlem River Drive.

The Borough President of Brooklyn is constructing the southerly portion of Brooklyn-Queens Expressway between Gowanus Parkway and the Navy Yard, and the Borough President of Queens the northerly portion between Queens Boulevard and Grand Central Parkway. In Richmond, the Borough President's Office is about to start work on the first section of Willowbrook Parkway. The Park Department is reconstructing Conduit Boulevard to expressway standards.

1950 will see the opening of some of these projects and substantial progress on others.



PROSPECT EXPRESSWAY BROOKLYN



NARROWS BRIDGE

SUBSEQUENT PROGRAM

During the war the bulk of the arterial program was ordered designed. As a result New York City was prepared to acquire land, clear rights-of-way, move dirt and build structures as fast as money became available.

Many problems are involved in getting work under way where so many departments and branches of government are concerned. Projects must be placed on the Master Plan of the City, written into the State Arterial Law and placed upon the Federal Aid Map. Layout and land acquisition maps must be approved by the City Planning Commission and the Board of Estimate after public hearings. Where State funds are involved, the State must submit a certificate acceptable to the Board of Estimate for its share of the cost of land acquisition, and federal highway officials must have been consulted. Every artery in the City of New York brings into the picture numerous city departments and utility companies, including rapid transit, water supply, sewer, electrical, gas and other facilities.

The river crossings of the Triborough Bridge and Tunnel Authority form important links in the New York City arterial system. These crossings have been built with modern approaches connecting directly with the parkway and expressway system. It is obvious that they could not have been financed without the arterial system, and conversely the arterial system would be of very limited use without the Triborough facilities.

Important arterials not yet under construction include Prospect Expressway, Nassau Expressway, Laurelton Parkway Widening, Bronx and Pelham Parkway Reconstruction, Moshulu Parkway Reconstruction, Richmond Parkway, Clove Lakes Expressway, Lower Manhattan Expressway and Mid-Manhattan Expressway. Plans for all these projects are either complete or well under way. The Triborough Bridge and Tunnel Authority is responsible for studying the Manhattan Midtown Elevated Expressway and for the proposed Narrows Bridge between Brooklyn and Staten Island.



WILLOWBROOK PARKWAY, RICHMOND
BAYONNE BRIDGE PLAZA

MANHATTAN
BLOWER BUILDING



ENGINEERING

RALPH SMILLIE, Chief Engineer

WILLIAM McK. GRIFFIN, Deputy Chief Engineer

JOHN H. QUIMBY, Engineer of Design

THEODORE P. KILIAN, Engineer of Design

LEO GEENENS, Electrical Engineer

HERBERT G. CRUTHERS, Mechanical Engineer

ERLING OWRE, Architect

NORMAN D. RICHARDSON, Engineer of Contracts

JACOB MECHANIC, Engineer of Construction

JOHN J. NANRY, Resident Engineer

DENZIL W. COE, Resident Engineer

JOHN C. WHITE, Resident Engineer

DAVID G. BAILLIE, Assistant to Chief Engineer

LOUIS C. WHITE, Assistant Engineer of Construction

CONSULTING STAFF

JESSE B. SNOW, Consulting Engineer

McKIM, MEAD & WHITE, Consulting Architect

AYMAR EMBURY, Consulting Architect

CHARLES P. BERKEY, Consulting Geologist

J. G. WHITE Engineering Corp., Electrical Consultant

GIBBS & HILL, Inc., Electrical Consultant

PORT OF NEW YORK AUTHORITY

—Material Inspection

CONTRACTORS

Andrew Catapano

Bethlehem Steel Co.

A. D'Angelo & Sons, Inc.

George H. Flinn Corp.

Mason & Hanger Co., Inc.

Grow Construction Co., Inc.

Gull Contracting Co., Inc.

and **L. G. Defelice & Son, Inc.**

Westinghouse Electric Corp.

E. W. Foley Associates Co., Inc.

U. S. Quarry Tile Co.

Fischbach & Moore, Inc.

General Electric Co.

Hoffman & Elias, Inc.

Joseph Weinstein, Inc.

H. Sand & Co., Inc.

L. I. Waldman & Co., Inc.

Astrove Plumbing & Heating Corp.

D.M.W. Contracting Co., Inc.

Novak & Rehner, Inc.

James J. Waters Corp.

Snyder Plumbing & Heating Corp.

Goodrich Electrical Installation Co.

Colmar Construction Co.

Max Seitelbach

Nager Electric Co., Inc.

Edward Kiss, Inc.

Atlas Tile & Marble Works, Inc.

John Meehan & Son

Thompson-Starrett Co., Inc.



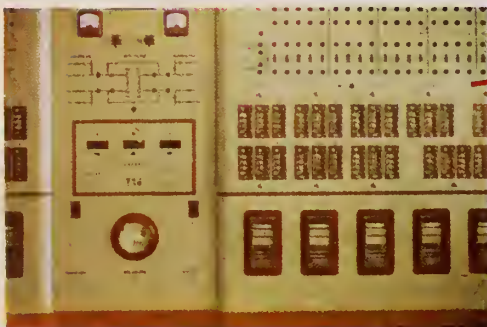
HOLING THROUGH SEPTEMBER 16, 1948

LABOR AND MATERIAL

13,050,000	Man Hours of Labor at the Site
813,000	Cubic Yards of Excavation
93,600	Tons of Cast Iron Tunnel Lining
883,391	Tunnel Bolts
799,000	Square Feet of Wall and Ceiling Tile
205,700	Cubic Yards of Concrete
13,932	Tons of Structural Steel
6,756	Tons of Reinforcing Steel
27	Fresh Air Ventilation Fans
4,161,000	Cubic Feet per Minute of Fresh Air
26	Exhaust Air Ventilation Fans
4,221,000	Cubic Feet per Minute of Exhaust Air
42	Changes of Air per Hour
104	Motors to operate Fans
11,516	Motor Horse Power
1,871	Miles of Electric Wire




FANS



CONTROL PANEL

9117'

BROOKLYN BATTERY TUNNEL-EAST RIVER

A cross-sectional diagram of the Brooklyn Battery Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

8557'

HOLLAND TUNNEL-HUDSON RIVER

A cross-sectional diagram of the Holland Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

8215'

LINCOLN TUNNEL-HUDSON RIVER

A cross-sectional diagram of the Lincoln Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.


6414'

QUEENS-MIDTOWN TUNNEL-EAST RIVER

A cross-sectional diagram of the Queens-Midtown Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

5511'

SUMNER TUNNEL-BOSTON HARBOR

A cross-sectional diagram of the Sumner Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

5135'

DETROIT-WINDSOR TUNNEL-DETROIT RIVER

A cross-sectional diagram of the Detroit-Windsor Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

3545'

GEORGE A POSEY TUNNEL-OAKLAND CALIFORNIA

A cross-sectional diagram of the George A Posey Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

3109'

BANKHEAD TUNNEL-MOBILE RIVER

A cross-sectional diagram of the Bankhead Tunnel. It shows a wide, shallow waterway with a blue wavy line representing the water surface. The tunnel structure is depicted as a series of lines forming a trapezoidal shape, wider at the top and narrower at the bottom, with a flat top surface.

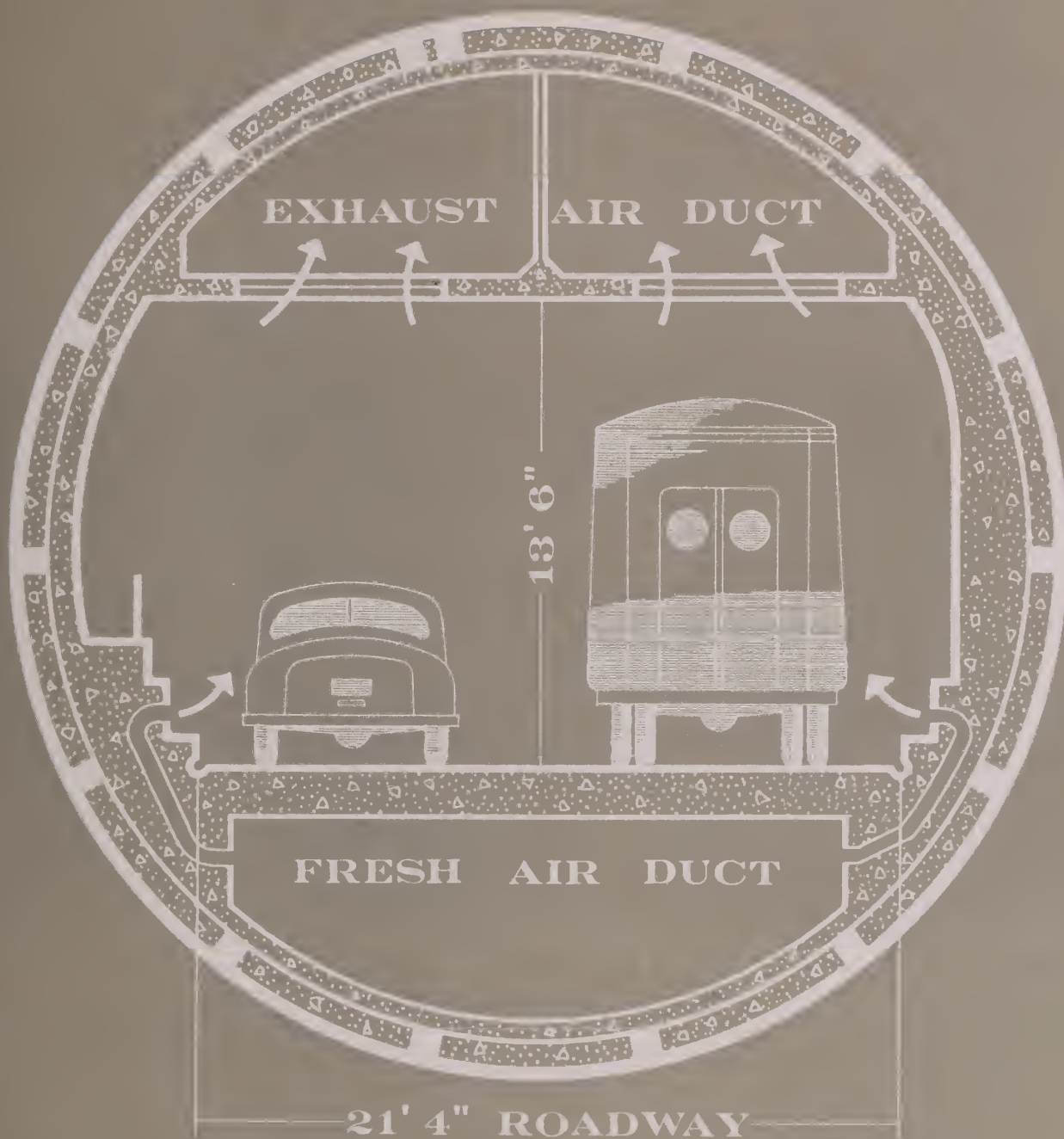
RICHARD C. GUTHRIDGE, Design

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Construction sketches and large
color paintings by ROBERT LIETZ

Black and white photography by
FRANK PIAZZA



EAST TUNNEL

